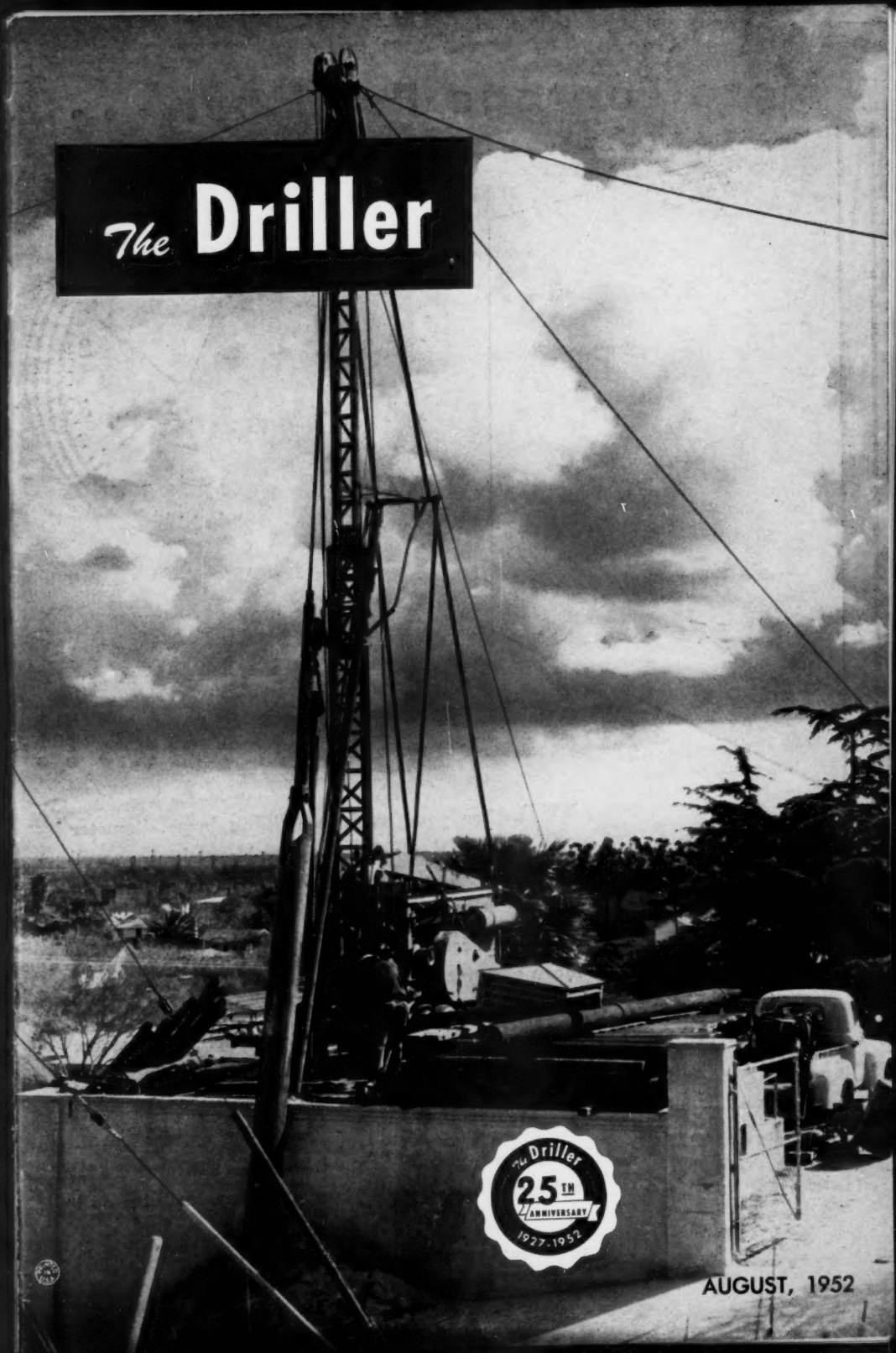
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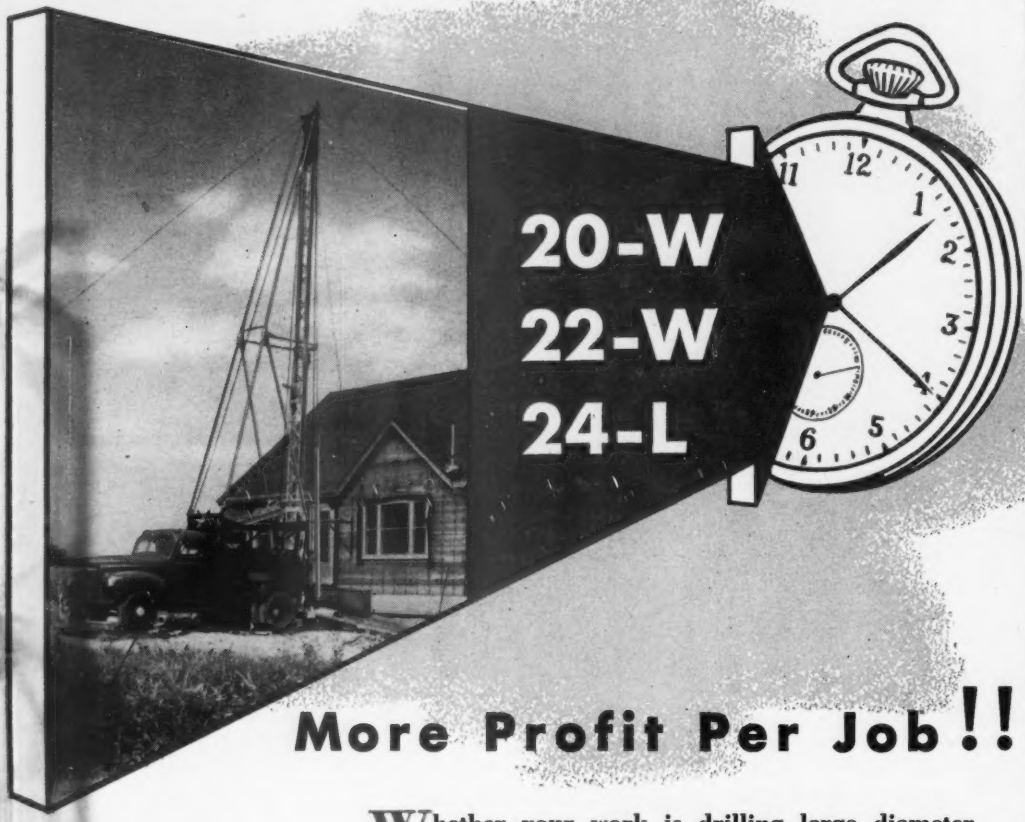


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# The Driller

THE MONTHLY MAGAZINE FOR WATER WELL DRILLERS
Founded 1927

Vol. 26 — No. 8

August, 1952


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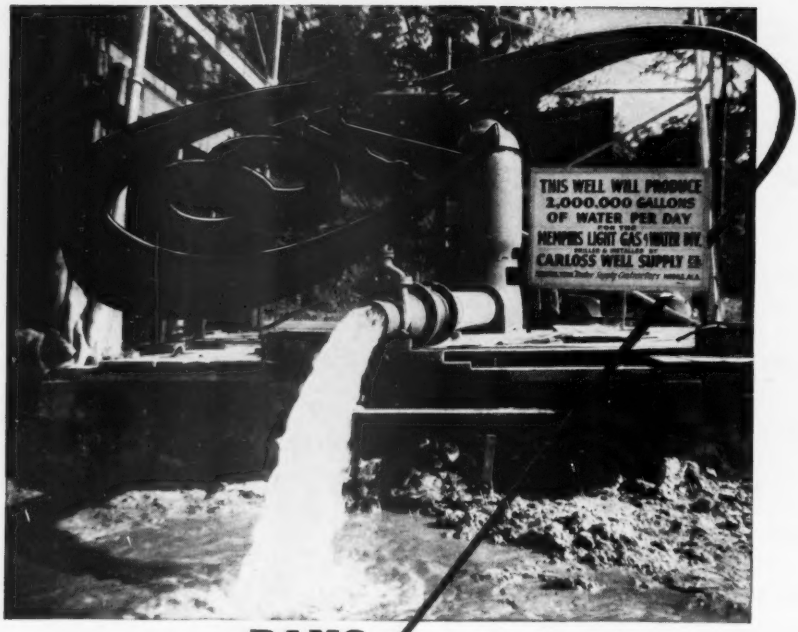


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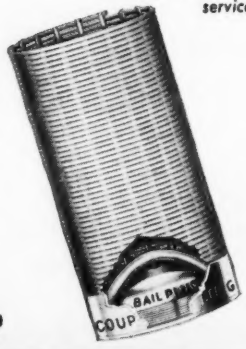

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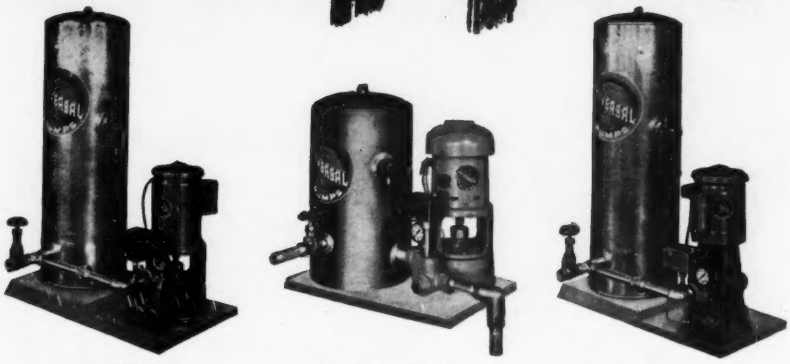

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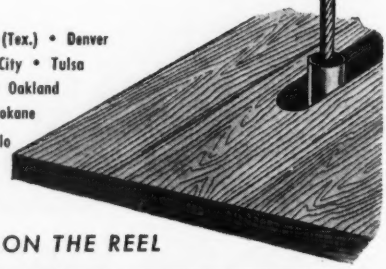

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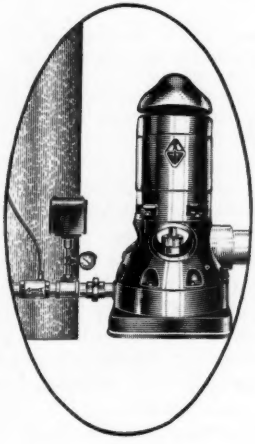

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# California's Fresh Water Dike Experiment

**Part III The Driller**

*By Ray Day*

**Skill and experience of M. R. Peck and Sons pays dividends as California engineers put Peck's equipment to good use.**

**R. L. Tracy, Office Manager of M. R. Peck & sons, keeps no closer record on costs than "the old man" . . . M. R. Peck, who sits at his desk early in the morning to clean it up so he can go out and look over his jobs.**

ONE day early this year a head engineer with the California Division of Water Resources stood talking to a rawboned man in khaki in a well drilling yard at Gardena. Quickly he explained the seawater intrusion into underground basins along the coast and told how a series of drilled wells might create the fresh water ridge to act as an underground dam. As the hydraulic engineer unfolded the plan which was described in Parts I and II of this series, the man in khaki nodded his head in quick comprehension.

"It'll work," he said quietly. And the hydraulic engineer seemed pleased that the tall man had pronounced that verdict.

The tall man was M. R. Peck, who heads the drilling firm of M. R. Peck & Sons. With the wealth of 31 years of drilling experience behind him, he felt that he could safely predict the behavior of fresh water injected into the salt-infested for-

mations underground. For Peck knows them from long experience.

Some of the information from that interview formed a basis for cost estimates, because Peck predicted accurately the footage a drill was likely to make. One of Peck's machines, a Bucyrus-Erie 24-L truck-mounted rig, is now doing part of the work.

There is no doubt that the engineering conception of the underground dike is brilliant, but some of the credit at least for the actual work must go to the practical experience of men like Peck and driller C. A. Rock of Costa Mesa who are both contributing experience to the project. Drilling by the two firms will finish a preliminary block of eight wells of the ultimate 43-hole water installation. Of nine 12-inch wells, five will be used for injection purposes, and four will be observation wells; 34 8-inch wells will furnish access for checking and test purposes by means of Mills-knife slots cut in the casings at water-bearing formation levels.

#### Long Time in Business

It was back in 1921 when Peck first established himself in the drill business in southern California. From a small beginning the firm has grown to a point where 30,000 feet of small diameter (up to 10-inch) and 12,000 feet of 16-inch wells are done each year. The firm also has the sales and service agency for Peerless pumps. The business has grown to the point where it has become more or less departmentalized in the interest of efficiency, with all department heads working under "the old man," as they call M. R., Sr.

M. R. Peck, Jr., heads the Pump Division, and is responsible both for sales and service. Bud Hills and Les Janeway help Peck in the role of field operators in the pump division. The senior Peck's son-in-law, E. P. Kent, Jr., bosses field drilling. Peck's oldest brother, W. W. Peck, is a machinist and has charge of equipment upkeep and repair. R. L. Tracy is office manager for the organization.

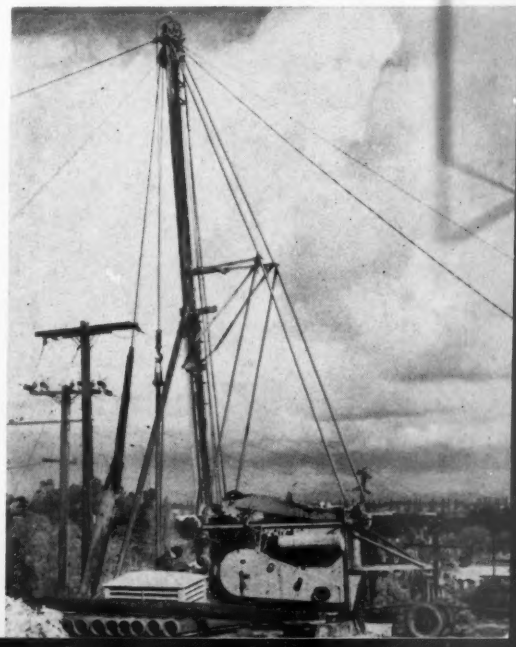
#### Cover Los Angeles Basin

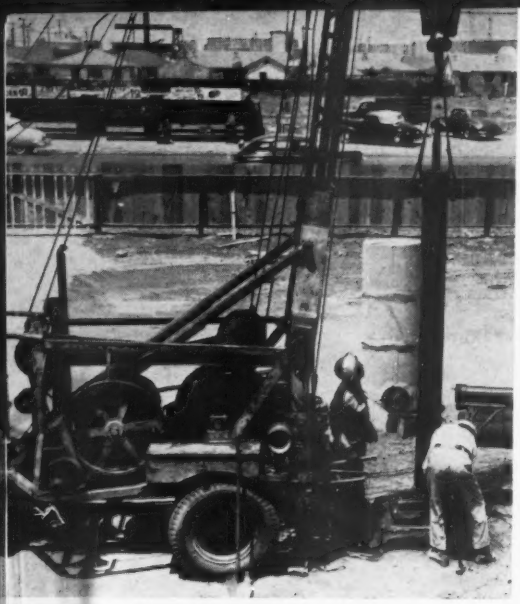
Company operations cover the general area of the Los Angeles basin at the foot of the Sierra Madre Mountains, extending from that point to the sea. However, the firm often can be found outside this territory. Recent jobs outside the home area have been done in Mexico, the San Francisco Bay area, and at the atomic energy test area at Los Alamos, N. M. One of Peck's drills, barge-mounted, was used for sampling and core recovery at Oahe Dam near Pierre, S. D.

In general, however, most of the firm's work is connected with water well drilling around the Los Angeles area. Drilling is usually connected with municipal, agricultural, private water company or individual wells.

As a rule the cities specify 16-inch

**Here the Bucyrus-Erie 24-L is shown on top of the pump station at a water plant near Long Beach.**





**Here is one of M. R. Peck's drill rigs on a routine casing job.**

**Orderly, well-kept parts bins are a feature of Peck's stockroom at the Gardena yard. Pump division Repairman L. E. Janeway (with hard hat) and M. R. Peck, Jr., select some bearings for an emergency pump repair job.**

diameter wells from 400 to 1000 ft. deep. Farmers want 16-inch wells too, but the top depth for them is about 800 feet. Small-diameter work is generally to a lesser depth, especially on core drilling and sampling.

In connection with the sampling activity, Peck's firm has done many a fine job which saved money for oil companies, soil and foundation engineers, and for Los Angeles County. Last year a piece of testing by Peck saved Los Angeles County an estimated $170,000 in the foundation design of a large bridge. Donald R. Warren Co., a Los Angeles foundation specialist, often uses the Pecks for test work on foundations this company has under design.

With the exception of this work, however, the company does very little drilling outside of water wells. Blast hole work, prospecting or other such drilling is seldom done by the Peck organization, with the exception of some oil test work which is done by a Howard-Turner rotary rig. The Pecks own two Bucyrus-Erie 24-L machines, one trailer mounted and the other truck mounted on a Ford F8. There is also a Ford mounted combination rotary, cable tool and bucket-type machine which was shop made; and a Ford-mounted rig which is used mostly for pump installation and removal.

### Water Levels Down

The Los Angeles basin area in which the Pecks work is all of sedimentary origin, with sand, gravel and clay formations often 1,500 to 2,000 ft. thick. A blue to brown shale underlies this formation, and fresh water is found in the layers of sand or gravel separated by clay strata. The underground water resources of Los Angeles County have been subjected to an exceptionally heavy pumping strain as people and industries flocked to the area during the past decade or so. In the past

10 years Peck has noticed a drop in underground water levels of up to 100 feet in his territory, and he for one was glad to see California's water engineers come up with an experiment which he believes will cure that situation.

**Promotion, Drilling, Upkeep**

Southern California is a land of high-pressure advertising by radio, television and other media, but Peck still successfully relies on the old-fashioned virtues of good workmanship and customer satisfaction to keep business coming his way. Aside from a small advertisement in the classified section of the Los Angeles telephone directory he does little promotion work. The wells he drills and the interest he shows in his customers is what counts, and as a result many of his orders are from repeat customers.

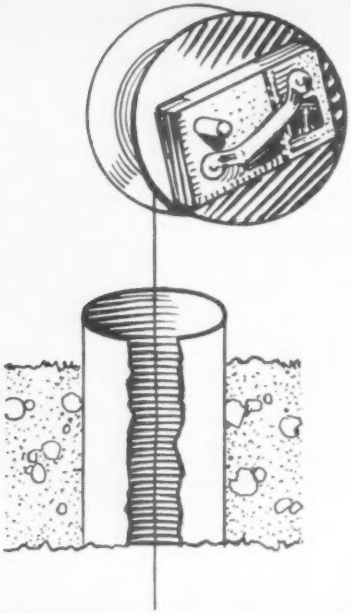
Peck tries to drill promptly after taking an order, and while the summer season is abnormally busy for him as it is with most well drillers, Peck does manage to keep reasonably well caught up to date.

Many are the unusual drilling jobs Peck has tackled. The job at Los Alamos for the Atomic Energy Commission was at an altitude of 8,000 feet, and was a water supply project for a municipality. It was here that Peck became acquainted with tuffa, an igneous, tough formation so bad it caused him to lose $10,000 on the first two wells. A 38-foot artesian head was finally overcome by rotary drilling and the use of exceptionally heavy mud, checked every 15 minutes to within 3 lb. Drilling was done in the floor of an ancient volcanic crator to 682 feet,despite heavy snow. When the job was finished the 1,250 gpm flow shot 38 ft. high due to the high artesian pressure. Later, he learned to compensate for this condition and make money.

The job at Oahe Dam in South Dakota was for the Army Corps of Engineers, and called for the core sampling of the Missouri River bed at the site of the gigantic dam now under construction. Peck put a 24-L on a barge and got most of the work

*(Continued on page 36)*

**A general view of a part of M. R. Peck's busy yard in Gardena. In addition to the routine repair of his well drills, Peck has the Peerless pump agency for service and repair.**

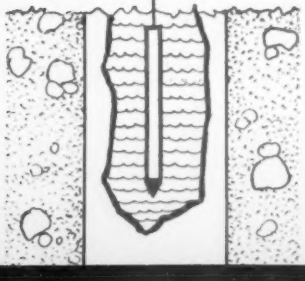


# Modern Methods of Measuring Water Levels

*By George M. MacLeod*
*Geophysical Division*
*Fisher Research Laboratory, Inc.*

**In this article the author deals with various aspects of obtaining accurate water level information to assist in the proper development of wells. He also covers the different types of measuring devices in common use and the necessity of keeping reliable pumping level and drawdown data.**

ONE of the most important considerations in the drilling, completion, and maintenance of a successful water well that is very often neglected is an accurate record of the water level. Accurate water level information is of importance in the proper placing of pumping equipment, in the determination of yields, and in the correlation and study of local and regional water supply problems. In fact the accurate location of the ground water level under different pumping and static conditions may be considered the basic item for any ground water problem. Further, water level data can often provide some idea of the relative productivity of different aquifers encountered in the well. Observant drillers have always noted that encountering a good aquifer will result



in a sudden rise in the water level. If this information is accurately observed and recorded during drilling it may be of considerable value in the proper development of the well.

As important as water level information is to the firm or individual developing water resources one would think that obtaining water level data would be a fairly simple and standard procedure. However, in practice, this is not the case. As any experienced driller knows, it can be quite difficult to obtain water level information.

There are numerous methods of obtaining water level data. Perhaps the oldest is the use of a chalked line attached to a float or weight. The float or weight is slowly lowered into the well until the surface of the water is reached. Then the line is withdrawn and the length of the chalk line above the wet mark or above the float, as the case may be, is measured to obtain the distance to water. Although this method is sworn to by numerous old time drillers the method is quite faulty and invites serious errors. In the first place it is often very difficult, especially so in the deeper wells, to tell when the weight or float reaches the water level. Secondly the casing is often wet making it difficult to tell just where the chalked line was wet from the water level and where from coming in contact with the sidewall. Further it is time consuming to have to repeatedly withdraw and measure the line.

### Air Line is Permanent

A standard method of measuring water levels in established wells is by the use of an air line, usually installed with the pump. In this case a small diameter copper or galvanized iron pipe is installed in the well to a carefully measured distance so that the end will be well below the lowest water level expected. The water rising in this pipe is then displaced by pumping air into the line. Since the air pressure required to displace the water in the line is physically related to the amount of water in the line it is possible to compute the water column above the end of the pipe line. The air pressure in pounds required to displace the water in the line times 2.31 will give the height of the column of water above the pipe opening. If this figure is subtracted from the total length of line the resultant figure will equal the water level at the time the reading was taken.

**One of the oldest means of measuring water levels, a chalk line and weight, are shown here.**

This method is generally accurate to within a few feet. It offers the further advantage that a permanent line and pressure gage can be installed at the time of initial pump installation. From then on it is possible to regularly obtain water level data for the well with a minimum of difficulty. Leaks in the air line or partial clogging can cause erroneous readings, however, and mathematical errors in reading the gage or in converting the pressure

data to the water level are fairly common.

A more accurate, economical, and in many cases more convenient method of obtaining water level information is through the use of what is commonly known as an electric sounder. All electric sounders depend to some extent at least on the ability of the well water to complete an electrical circuit. In other words when the electrode or sounder tip touches the water surface some sort of an electric circuit is completed.

An early type of electric sounder still in use today consists of an insulated single conductor wire with a protected tip on the cable end to be lowered into the well. The surface end of the line is connected to a small electric light, buzzer, or current meter, and thence to a dry cell battery. The other lead from the battery is connected by means of a clamp to the well casing. When the tip of the cable end lowered into the well comes in contact with the water the circuit is completed and an indication observed on the light, buzzer, or current meter.

**Air line gage installed in a well near Sunnyvale, Calif., is being operated by driller Robert Garcia. An ordinary tire pump is used to operate the air gage.**

#### Improved Electric Sounder

An improvement on this method is found in units employing two conductor cable. In this case the two leads on the cable end to be lowered into the well are enclosed in an electrode assembly so that they will not be shorted until they come in actual contact with the water level. The upper end of the cable is attached to a dry cell battery and to a small light, buzzer, or current meter. The shorting of the well end of the cable due to contact with the water surface completes the electric circuit and the indicating device will then function. This type of water level indicator has an advantage over the single conductor since no ground connections are made to the casing. Hence, the unit will function equally well in uncased test holes or in uncased holes drilled in hard rock.

There are several problems connected with the use of all electric sounders. (1) The electrode construction on the cable end of either the single or two conductor cable must be such that water entering the well above the static or pumping level will not result in false readings by shorting the electrode and thereby completing the electrical circuit before the water level is actually reached. (2) The electrode construction should be such that multiple readings can be obtained in the well without the necessity of withdrawing and drying out the electrode assembly between each reading. (3) Since there is often a layer of oil above the water level as the result of oil leakage from the pump

and pump motor, a method must be found to allow the electrode to pass through this oil layer without becoming too contaminated to function. Usually if the electrode is lowered directly through the oil with no protective provisions it will become so coated with oil that it will not function properly.

Consideration should also be given to the manner in which the actual depth figure to the water level is obtained. In early models the electric cable was withdrawn and the distance measured as with the weighted tape method described earlier. Another method is to use some sort of counting arrangement so that as the cable enters the well it is fed over the counter wheel thereby indicating the total amount of cable in the well. The simplest method is to calibrate the electric cable itself with metal footage markers at definite intervals, for example every five feet. In this manner, the amount of cable in the well can easily be determined at any time.

#### Improvements Still Necessary

However, no matter how perfect the mechanical performance and construction of the modern water level indicator may be there are still difficulties ahead. Due to the usually small openings left at the base of the pump it is often difficult to get a measuring device into the well casing. Once actually in the well, any irregularity in the casing surface or pump column will offer an opportunity for hanging up or entanglement of the electrode and cable. Occasionally the electrode will become wedged between the pump column and the casing where the pump column is off center. Jerking or shaking the cable to free the electrode can result in the most fantastic knots and cable snarls imaginable.

**A modern battery operated water level indicator is shown here. The electric cable is calibrated at regular intervals with metal footage markers.**

In addition to all the technical difficulties listed above it should be remembered that the water level itself is subject to a wide range of fluctuations. To obtain reliable pumping level data it is necessary to take numerous readings until it can be conclusively seen that a state of equilibrium has been reached between water flowing into the well and that being withdrawn by pumping. Static level tests should be just as carefully obtained so that the water level will have fully recovered from recent pumping.

As indicated earlier the importance of accurate water level data cannot be exaggerated. Yet it has been shown that this data can be at times extremely difficult to obtain. Nevertheless the very great importance of water level information com-

*(Continued on page 36)*

# NEWS of the month

## Drillers Advisory Group Seeks New Classification for Water Well Pipe

Water well drillers have been experiencing serious difficulty in getting delivery on car-load lots of proper size pipe, the Water Well Drillers Industry Advisory Committee told the National Production Authority, Department of Commerce at their first meeting held June 27.

The larger water well drillers normally buy pipe through a jobber in car-load lots on direct order from the mills. Under the operation of M-6A, the warehouse order, however, they have been penalized, committee members said. Jobbers no longer wish to accept orders for larger size pipe (6 inches and over in diameter) because it must be charged against their allotment. Instead the jobbers apparently prefer selling pipe of smaller diameter, used chiefly by plumbers, because it nets them greater profit.

### Affects All Pipe Users

Approximately only 25% of the drillers purchase pipe in car-load lots, the committee explained, but all users are indirectly affected. The mills make up only a certain percentage of their output in the larger diameters, hence once an order is charged against the jobber's quota he has just that much less to distribute among drillers using less than car-load lots.

The committee consequently recommended that NPA attempt to work out an arrangement whereby car-load lots ordered by a jobber for delivery direct from the mills should not be charged against the jobbers quota. Water well pipe, the committee felt, should be classified as water well country goods, and as such receive similar consideration as pipe for oil wells which is classified as oil well country goods. A primary consideration in such a plan they said was the importance of the material to the health and welfare of thousands of communities throughout the United States.

### Request Advance Allotments

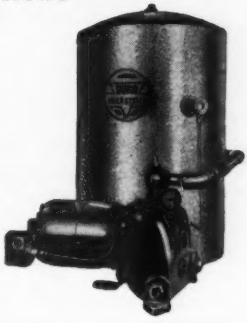
The committee also stated that water well drillers have had difficulty in getting their orders on mill schedules and asked that they continue to receive allocations well in advance. A lead time of at least six months is necessary. They requested they be allowed to receive advance allotments for the second and subsequent quarters of 1953 based on their present percentage of base period without the necessity of reapplying each quarter.

Delays of six to nine months in the delivery of electrical switchgear, particularly motor starters, plague the industry at present the committee said. NPA officials stated that in cases where a job is complete except for one item such as a switchgear, a driller may get some relief by requesting special help in securing the necessary part. They should submit a statement of their case on Form NPA-F-148 to receive consideration, NPA said.

G. E. Arnold, Director of the Water Resources Division, NPA presided. Industry representatives who attended are: John T. Anderson, Morris, Ill.; T. B. Caswell, Bergerson & Caswell, Inc., Minneapolis, Minn.; Harold H. Bunker, Arnold, Md.;

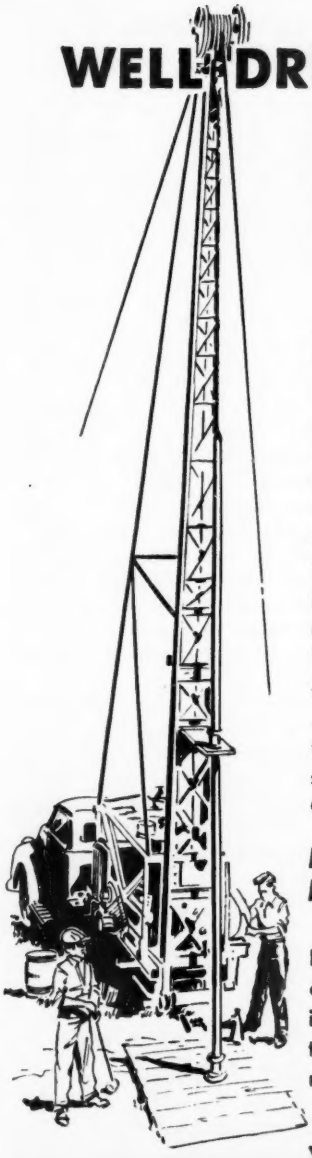
# WELL DRILLERS FIND...

## *Duro Jet Water Systems are quickly installed and give trouble-free operation!*



Duro Water Systems are extremely easy to install. They are compact, durable, and available in either horizontal or vertical models. Duro Jet Water Systems are adaptable to deep or shallow well installation. Duro has been building the right pump for all of your job requirements for over 35 years.

You don't sacrifice your profit in making service calls when you install a Duro Jet Water System . . . you can count on years of trouble-free operation. Your customers are sold on how quietly and smoothly their Duro Jet Water System performs. On your next job be sure to recommend a Duro.



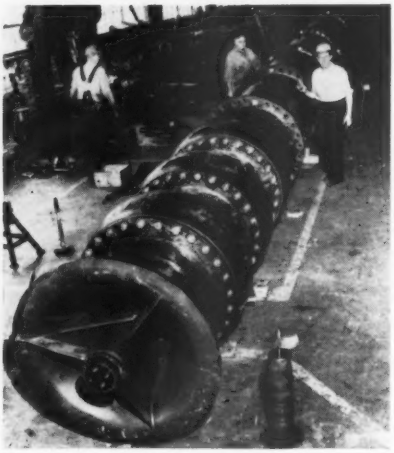
### *Now is the time for fast profits with Duro high capacity portable cellar drainer.*

Dependable, fast acting, low level pumping, Duro's Model CD 26 cellar drainer is built of non-rusting, non-corrosive materials. Write today for complete product information and prices.

**Duro builds a complete line of water softeners and water systems.**

**THE DURO CO., DAYTON 1, OHIO**

Gerald F. Twist, Food Machinery and Chemical Corp., Los Angeles, Calif.; R. O. Heater, Heater Well Co., Inc., Raleigh, N. C.; Earl C. Kohl, Kohl Bros., Harrisburg, Pa.; H. E. Lauman, C. W. Lauman & Co., Inc., Bethpage, Long Island, N. Y.; O. F. Jensen, Layne-Texas Co., Ltd., Houston; R. M. Leatherbury, Leather Bros., Shadyside, Md.; H. W. Peerson, Jr., Peerson Drilling Co., Birmingham; T. W. Thorpe, Thorpe Well Co., Des Moines, Iowa; Stayley H. Trask, Trask Artesian Well Co., Norwich, Conn.; Robert U. Parlett, Washington Pump & Well Co., Washington, D. C.; and L. F. Winslow, Walcott, Iowa.



**The largest deep well turbine pumps ever built have been produced at the Pomona, Calif., pump works at Fairbanks, Morse & Co. for use by the Air Force in its rocket research program. Each of the 48-in. turbine pumps is 42-ft. long, weighs 30,000 lbs. and can pump 25,000 gpm. In this photograph, one of the mammoth pumps is contrasted with an ordinary 6-in. turbine pump in the foreground at right.**

## Washington State Regional Meet Held

Everett was host city to the Washington State well drillers who held their spring regional meeting there on March 22. In the absence of President Zinkgraf, Harold Meyer, Vice-President presided. A report by Mr. Erdman, of his trip to the National convention, was read by the secretary as he also was unable to attend.

A brief report was made on the recent pipe survey conducted for the National Water Well Association. One of the main topics of discussion was the careless disregard of state laws regarding the use of old wells for sewage disposal. The fact was stressed that it is the well driller, as much as the well owner, who will benefit from the abolishment of this practice since his chances of getting a contaminated well in the general vicinity of such sewage disposal are very high.

Discussion was heard on the holding of the annual meeting jointly with the Oregon Association in Portland. The group is in favor of it and Mr. Zent was instructed to advise the Oregon committee of that fact. The date will be November 14-15, 1952.

Association president, Oliver Zinkgraf, is improving steadily and planned to be in attendance at the next meeting.

## Duro Manufacturing New Jet Pump

The Duro Co., Dayton, Ohio, announced production of a new direct pressure, jet type water system, the Duroflo Pump, especially designed for small home, summer cottage, highway store, etc., installation. According to the manufacturer the new pump is compact, economical,

and engineered to perform in small spaces with ample capacity to deliver up to 500 gph.

Every operation is completely automatic. The pump is recommended for all shallow well applications to depths of 25 feet or less. The complete system is 17½ inches high and has a 2½ gal. tank. It is self priming, complete with heavy duty, capacitor type ¼ hp ball bearing motor.

For complete information and specification chart write, The Duro Co., Dayton 1, Ohio.

## Macwhyte Co. Elects President

At a special meeting of the Board of Directors of Macwhyte Co., Kenosha, Wis., wire rope manufacturers, George C. Wilder was appointed a director to fill the unexpired term of the late Jessel S. Whyte, and was elected president of the Macwhyte Co.

Wilder was vice president and assistant general manager and has served in various capacities since joining the company in 1938 after receiving a B. A. degree from Cornell university.

## Goulds Pumps, Inc. Appoints New Distributor

Monogram Electric Products Co. has been appointed by Goulds Pumps, Inc., Seneca Falls, N. Y., to handle its water systems and industrial pumps in the Greater New York Area, including Hudson and Essex Counties in New Jersey.

According to the manufacturer this new distributor is particularly well equipped to handle pump sales in this area, for, in addition to the adequate stock of pumps and spare


JOHNSONITE
PLASTIC PIPE

- Odorless
- Tasteless
- Non-Toxic
- Corrosion-Proof
- Flexible or Rigid
- Acid Resistant
- 1½ Times Less Frictional Loss
- 13 Times Lighter Than Ordinary Pipe
- Adaptable To Standard Fittings

Complete Literature on Request

*Out In The Open Or Out of Sight*
*The Right Plastic Pipe is Johnsonite*

FOR INDUSTRIAL AND COMMERCIAL APPLICATIONS EVERYWHERE

JOHNSON
PLASTIC CORP.
BOX 268 • CHAGRIN FALLS, OHIO

parts carried, they maintain a special pump department with trained and experienced men. The new distributor is located at 401 Broadway, New York.

## Carlon Announces New Plastic Pipe Fittings

Carlon Products Corp. recently announced the development of new insert type ell and tee couplings to facilitate sharp turns or take-offs from flexible plastic pipe lines. One fitting now effects a connection which formerly required the use of three or four.

These new fittings are quickly joined in the same manner as previously used for insert couplings. Stainless steel clamps are tightened over the pipe and fitting to draw the pipe down onto the serrations of the insert to assure a positive, leakproof joint. Only tools required are saw and screwdriver, and connections can be completed in less than two minutes.

When flexible plastic pipe is to be joined to a metal fixture or a previously installed metallic system, an insert adapter is used. One end is screwed onto the metal threads, and then the plastic pipe is slipped over the serrated end and clamped securely. Adapters employ I. P. T., which mate with standard female threads.

## Jacuzzi Markets New Centrifugal Pump

A new general purpose centrifugal pump has been placed on the market by Jacuzzi Bros. Inc., manufacturers of the jet type pump. This new Jacuzzi centrifugal is called the Series AM pump and is designed

REVERSIBLE
POWER UNIT

FEATURES:

★ Threads 2½ to 6" pipe or conduit *without* a vise.

★ Threads *all* 1 to 6" pipe or conduit with standard dies.

★ Powered by any ½" H.D. air or electric drill.

★ Lighest weight — only 14 lbs.

★ Operates in any position or close space—well pit, trench, corners, etc.

*SOLD BY ALL LEADING JOBBERS*

**MUNCIE GEAR WORKS, INC.**

705 East Wysor St. Muncie, Indiana

primarily for economical pumping of large capacities at moderate heads. It is especially suitable for use with air conditioning systems and circulating water for cooling towers. It may be used for sprinkling lawns, pumping for swimming pools, and many other industrial or agricultural duties the company reports. Sizes range from ¼ through 5 hp. For descriptive bulletin and performance information write to Jacuzzi Bros., Inc., Richmond, Calif.

## Mobile Pump Exhibit Begins State-Wide Tour

Universal Mfg. Co., Berkeley, Calif., West Coast pump manufacturer, is now sending a mobile exhibit of their products right up to the door step of the prospective pump buyer.

The exhibit, in a 1952 Mercury Station Wagon, of popular models out of the company's line of pumps, recently left the factory for a complete tour of the states.

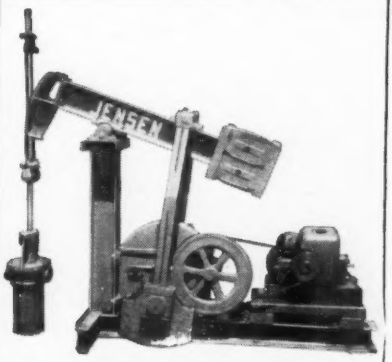
Pat Bottone, Sales Mgr., plans to visit with distributors and dealers, hold educational meetings, and go with salesmen on personal calls to prospective buyers, demonstrating the operation of the pumps for various water depths.

The display is mounted on a roller bearing sliding table which can be pulled out of the rear of the station wagon for close inspection.

## Peerless Introduces Turbine Vane Pumps

For pumping hot and cold, clear and vaporous liquid, in moderate capacities, against medium or high heads, Peerless Pump Div., Food Machinery and Chemical Corp. has recently introduced a complete line

*(Continued on page 26)*


**Pump Handle Pete Says:**

**JENSEN**
Pumping Units are 33-years "young"

**Over 33 years ago the Jensen brothers started making good pumping equipment. Drillers and well owners were quick to recognize their quality. But the Jensens have never rested on their laurels, they have continued to make their pumping equipment better and better.**

**Today JENSEN Pumping Units enjoy an enviable reputation for economy and reliability. Qualities proven over the years, and reflected in repeat orders from water well drillers around the world.**

**Before you equip your next well, get the facts and figures on Jensen Units. Write to 1016 Fourteenth St., Coffeyville for catalog and prices. Or ask your favorite supply store to write us!**

**JENSEN**
**BROS. MFG. CO. INC.**
Coffeyville, Kan., U.S.A.

# J. S. Whyte

Jessel S. Whyte, 61, died May 28 following a prolonged illness. At the time of his death he was president and general manager of the Macwhyte Co., wire rope manufacturer, Kenosha, Wis.

He was educated at University high school, Chicago, Cornell university, Ithaca, N. Y., and took his post-graduate studies in metallurgy at Sheffield university, Sheffield, England. He served his apprenticeship in metallurgy at Bruntons Wire Mills, Musselburg, Scotland.

Whyte was a member of Psi Upsilon fraternity, First Baptist church, Chicago Athletic association, Kenosha Rotary club, Kenosha Country club, Kenosha Chamber of Commerce, Elks, Eagles and Moose lodges. He was a 32nd degree Mason and Shriner and a member of the American Legion, Last Man's club, 40 and 8, Cornell club of New York and the Cornell club of Chicago, a member of the Wisconsin Board of Vocational and Adult Education.

He was a member of the board of the Macwhyte Co., the First National bank of Kenosha, the American Hoist and Derrick Co., St. Paul, Minn., the American Red Cross, the Kenosha hospital and the Kenosha Youth Foundation. He took an active part in the Community Fund organization for many years.

Survivors besides his widow include four daughters, Miss Harriet L. Whyte, and Mrs. George Wilder, Kenosha; Mrs. Frank Griffith, Washington, D. C.; Miss Ruth Whyte, and his mother, Mrs. Anna Whyte, Kenosha, and six grandchildren.

Whyte started his career with Macwhyte Co., in 1905 in the winding department when the plant was located in Coal City, Ill. Later he studied in England, served his apprenticeship in Scotland and returned to Macwhyte Co. as a foreman in the wire mill in 1914.

In 1916 he was elected a director and was general superintendent and a director of the company in 1917 when he left for army service. He returned to the Macwhyte Co. in 1919 taking up the general superintendent's duties.

In 1921 he went to Pittsburgh to be in charge of sales for the entire eastern territory and in 1922 was called to help at the post of assistant general manager. He was appointed vice president in 1927 and in 1929 became vice president and general manager. After serving in this capacity for 10 years, he was made president and general manager of the firm in 1937.

# PIONEER WITHOUT PEER . . .

For the man who is interested in handling the best line of submergible pumps, the advantages offered by selling Reda - Submergible pumping units cannot be equaled:

★ Reda has 35 years experience in building submergible pumps for water, corrosive liquid, and oil wells. Reda is the world's largest manufacturer of submergible pumps.

★ Reda - Submergible pumping units are the result of the finest engineering, and most highly diversified experience in submergible pumping. They provide dependable service that means satisfied customers.

★ Reda - Submergible pumping units are American-made by Americans. No worry or costly delay because of imported motors, pumps or parts. Prompt service by factory-trained personnel.

★ Immediately available in sizes 3 HP to 22½ HP; Capacities to 450 GPM; lifts to 2200 feet. Larger volumes and lifts to 12,500 feet available on special order.

TERRITORIES AVAILABLE IN SOME AREAS . . . WRITE TODAY FOR FULL PARTICULARS TO:

**REDA**
**PUMP COMPANY**
**BARTLESVILLE, OKLAHOMA**

## News . . .

(Continued from page 23)

of self-priming and standard design turbine vane type pumps according to a company release.

The designation Type TVE is given to the line of pumps close coupled to face mount electric motors; the designation Type TVB is given to the line of flexible-coupled electric drive pumps. Pumps in both lines are available with or without the self-priming device.

The principle of operation on which these pumps are constructed is very simple. In the turbine vane type pump, liquid enters the suction inlet, passes through suction ports and is picked up by a single multi-vaned impeller. As the vanes, rotating at nominal speed, pick up the liquid, the centrifugal force imparted by the vanes throws the liquid into the channel from which it is deflected into succeeding vanes of the impeller. This is called a regenerative action and it continues around the channel, continually building up pressure until the liquid reaches the stop which deflects it into the discharge outlet. A result of this regenerative action is the simplified pumping of light or vaporous liquids. Applied to boiler feed service or condensate return service, hot water up to 250° F. can be handled. An additional feature of this type of pumping action is the ability of the pump to handle liquids where a constant capacity is required, but where head conditions will vary. In all cases the liquid must be clear without solids in suspension as their presence quickly destroys the close-running clearance upon which the vane type impeller relies for optimum operation.

There is only one moving pump part in this pump, the free running impeller. Because side and top suction are employed in the case design,

(Continued on page 30)

**At the Ohio Well Drillers Assoc., Inc., meeting held at Buckeye Supply Co. the display of the Advance Pump Co., is shown in foreground while "Dutch Lunch" goes on in background.**

**Among the displays at a recent meeting of the Ohio Well Drillers Assoc., Inc., was the Bucyrus-Erie 22-W scale model drill. Some of the visitors are shown inspecting its operation.**

# Greatest Name in Cable Tools

Fig. 179
Acme W. L.
Knife
Cutters

Fig. 180
Cover Plate

ACME

TRUSTWORTHY
SINCE 1900

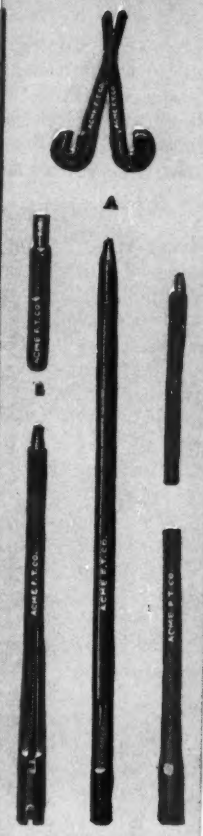
## Cuts 6 Strands at 1-Clean Bite

Ask a Driller who owns an Acme WL Cutting Outfit and he'll say, "It's the MOST Safe, Sure, Quick, Clean-Cutting means of parting cable from a string of stuck tools."

Its EXCLUSIVE feature is cutter's assemblage: Cutter edges so spaced that each snips a separate cable-strand . . . simultaneously cutting 6-strands at 1-clean "bite." No frayed ends. Cutters of toughest tool steel.

Cuts any size cable in 4" hole, or larger. Smaller sizes on special order. Outfit consists of Knife, Jars, Sinker, Rope Socket and Wrenches. With simple precautions, (see catalog) runs without wrapping. (Outfit, less cutters, often used as Jar Bumper.)

It's the unique, patented design of a noted Well Driller. Every part meets ALL correct-steel, controlled heat-treatment and inner-EXTRA craftsmanship standards making Acme Tools the famous-favorites since 1900.




A—Tool Wrenches
B—Rope Socket
C—Wire Line Knife
D—Long Stroke Jar
E—Sinker

Mail penny postal NOW for your free copy of Acme's new 36 page Catalog and Tool-use Manual — expressly compiled and packedful of "cashable" information for Water Well Drillers.

The A-to-E tools in the panel (right) complete Acme's W. L. Cutting Outfit . . . fashioned by 51-years of superior "know-how" to give more of EVERYTHING you need in Cable Tools.

## Acme Fishing Tool Co.

PARKERSBURG, W. VA.

"To-be-Sure—Always Ask for Acme's

# *BITS* from the wit sharpener

Joe's wife caught up with her husband in a bar, sampled the highball he was drinking, and demanded, "How can you drink such horrible stuff?" "See!" said the husband, "and all the time you've thought I was out having fun!"

Seems there was a Scotchman, name of MacPherson,—and one morning, his thrifty pursuits were interrupted by a telephone call from the bank.

"MacPherson,—you've overdrawn your account by some $65," said the teller, — which made MacPherson angry.

"A wee favor, m'lad," he purred back at the teller, "look up and tell me our relationship just 30 days ago."

The teller did it, and reported that 30 days ago, Mac had a balance in his favor of $117;

"Aye!" bellowed MacPherson, "and did I call you?"

After an operation, a girl patient asked her doctor if the scar would show. "That" said the doctor, "is entirely up to you."

Nervous young man: "What do I have to pay for a marriage license?"

Clerk (without a smile): "Two dollars down, and your entire salary each week for the rest of your life."

Joe: "I saw you down town the other day standing on the corner winking at the girls."

Moe: "I wasn't winking at the girls. The wind was blowing and something got into my eye."

Joe: "Yeah, and she got in your car, too."

The stranger ambled into the farmyard and was greeted by the farmer. The visitor produced his card and remarked: "I'm a government inspector and am entitled to inspect your farm."

Half an hour later the farmer heard screams from his pasture, where the inspector was being chased by a bull. Leaning over the gate as the inspector came by, the farmer cried: "Show him your card, mister —show him your card."

A Judge says that hugging and kissing a girl while driving a car 50 miles an hour is wanton misconduct. Not only that, Judge, but it isn't fair to the girl who should have a man's undivided attention when he's hugging and kissing her.

A man had been married for about a year and he had taken to spending his evenings downtown with the boys. One night his conscience worried him so he called his young wife on the phone.

"Hello darling," he said, "slip on your glad rags and meet me downtown. We'll have dinner at some quiet little place and then we'll see a show. How about it?"

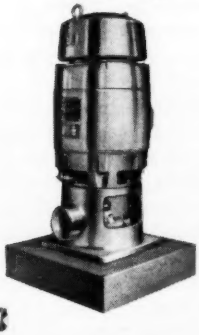
"I'll be delighted to meet you, John," was the reply. "But why not come out to the house and get me? There's nobody home."

As the husband's name was William, he now spends his evenings at home and his wife wears a wise smile.

Contractor: "What do you want? I fired you two weeks ago."

Helper: "I came back to see if you're still in business."

## "BEE-JAY"



This small deepwell turbine pump is designed for wells 6" I.D. or larger. Ideal for domestic pressure systems, small town water supply, and general farm water supply. May be driven by electric motor, gasoline or diesel engine. Moderate operating speed (1,750 rpm) and rugged construction add to economical performance. Capacities to 6,000 gph. Heads to 200 feet. Write for Bulletin 50-5150.

## B J SUBETTE

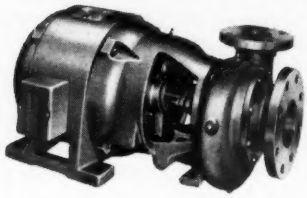
A smaller version of the successful BJ-originated submersible pump design. This mechanically sealed motor and close-coupled pump unit operates completely submerged in the well. Can't be seen or heard ... no pump house or shaft alignment problems. Designed for wells 6" I.D. or larger. Capacities to 7,800 gph. Write for Bulletin 51-5300.

*Dealers...*

# AVAILABLE NOW ON A NON-EXCLUSIVE BASIS!

You now can sell these three Byron Jackson farm pumps without any contract arrangement or special dealership commitments. Available for immediate delivery from stock. Write, wire or phone.

## B J BILTON



No rigid foundation is needed for this close-coupled pump and motor. May be mounted on a barn wall, floor or in a sling for portable use. Can be used as a booster for overhead irrigation or increased pressure in any system. Capacities to 12,000 gph. Heads to 500 feet. Write for Bulletin 52-2040.

**Byron Jackson Co.**

*Since 1872*

**P. O. Box 2017 Terminal Annex, Los Angeles 54, Calif.**

OFFICES IN PRINCIPAL CITIES

## News . . .

*(Continued from page 26)*

disassembly of the liquid end for inspection and repair is simple and easy and may be accomplished without breaking suction or discharge piping.

The self-priming device consists of a trap on the suction and an air separating chamber on the discharge. These insure liquid in the pump case at all times, which is necessary for self-priming. The suction trap includes a strainer for further protection to the pump.

Standard construction materials for handling clear water is with cast iron case, bronze impeller and liners, stainless steel shaft and a standard mechanical shaft seal. Cover liner, impeller and inner liner are all replaceable.

Capacity range at 3,500 rpm is up to 58 gpm; at 1,750 rpm, up to 56 gpm. Head range at 3,500 rpm is up to 800 feet; at 1,750 rpm, up to 300 feet. Motor sizes up to 20 hp are available at 3,450 rpm and up to 7½ hp at 1,750 rpm.

Complete descriptions and illustrations of these turbine vane type pumps together with head-capacity selection charts, sectional views and elevation drawings and dimensions are included in a new bulletin which may be obtained by writing the manufacturer, Peerless Pump Div., Food Machinery and Chemical Corp., 301 West Ave., 26, Los Angeles 31, Calif., and requesting Bulletin No. B-2205.


**WELL DRILLERS!**

If you operate in a "hard water" area, don't limit your services to supplying your customers with hard water—give them soft water as well. Rent them FILTER-SOFT units, the nationally accepted method of converting hard water into soft. Servicing FILTER-SOFT along with your well-drilling is a "natural."

**Get a**

**Filter-Soft**

**Franchise**

We furnish softener units and inexpensive regenerating equipment on sale or rental basis. No experience necessary.

**Territory being allotted daily. Write for interesting details.**

**FILTER-SOFT CORP.** Dept. TD

12911 Artesian Detroit 23, Mich.


## Record Attendance at Myers Training Class

The largest group of dealer and distributor representatives ever to attend an F. E. Myers & Bro. Co. Sales Training Class in Ashland, Ohio, convened at the Myers factory on May 5 for a four-day session.

A total of 63 persons from 15 states including 45 dealer and distributor representatives attended the class. For the first time in its training history, Myers was host to two women distributor representatives. The two lady trainees were Mrs. Mary Dutton and Miss Jackie Currie, both of the Virginia Supply & Well Co., Atlanta, Ga.

Over 35,000 persons have attended Myers training classes, either at the factory or in the field, since the program began in 1945. This was the ninth factory class this year.

## A. Y. McDonald Opens Dallas Branch

The A. Y. McDonald Mfg. Co. announces the opening of a new branch in Dallas, Texas. The opening of

this building comes a year after McDonald began operations in this area to serve Texas and surrounding states. George Zimmerman is Manager of the office.

Featured as a part of the building and grounds are a large parking area for automobiles and trucks, loading and unloading docks for handling all types of trucks and a railroad siding running to the building. Approximately 130,000 square feet of adjoining land will house future additions to the present building.

Over 25,000 square feet of warehouse space allows ample storage for the complete distributors' stock of plumbers' brass goods, pumps and cylinders, steam and gas cocks, bulk oil and service station equipment, power pumps, water supply systems, plumbing supplies, brass and iron specialties, heating materials, mill supplies, building materials, and farm and home equipment.

## Ground-Water Situation Studied in Japan

A report on ground-water conditions in Japan, together with recommendations to the Japanese Government on corrective measures needed, has been placed in Geological Survey files open to public inspection according to the secretary of interior.

Maurice L. Brashears, district geologist for New York and New England in the Ground Water Branch of the Survey, accomplished the study as visiting expert consultant in the Mining and Geology Division, General Headquarters of the Supreme Commander for the Allied Powers, in Tokyo.

The report states that although only meager data have been collected on ground-water usage and availability in Japan, rough estimates in-


**There are Dollars in deep wells . . .**

*when you install*
**SUMO SUBMERSIBLES**

**Boost profits and good will by using Sumo Submersibles on your deep well jobs. They're quick, easy and inexpensive to install — one man can handle the entire job. Once the pump is in, you don't have to worry about water getting into the motor—*the motor is water-lubricated.* Sumos will run for years without attention.**

**Sumos are made by *the only manufacturer who specializes in submersibles exclusively* — they're backed by over 20 years of manufacturing and application experience—and they are available in the most complete range of sizes and settings down to 1,000 feet.**

Sumo®

**Write today for complete information.**

**SUMO PUMPS, INC.**
**STAMFORD, CONN.**

dicate that ground-water reserves amounting to about 140 trillion gallons are available for maintaining crop yields and furnishing supplies for other activities during extended periods of dry weather. To reach this figure it was assumed, from available information on the geology, that 25% of the land area of Japan is underlain by saturated, water-bearing rocks having an average thickness of 90-feet of which 20% represents water that would drain into wells. That quantity, 140 trillion gallons, is about 15 times the amount of ground water currently withdrawn in the United States each year.

**H. L. Nelson, Fairplay, Colo., was contracted for placer drilling in Montgomery Gulch to determine presence or lack of minerals before the area is used for storage lake. Water will cross mountains in tunnel. Bucyrus-Erie 21-W was used for the heavy job.**

However, local situations present problems that are at considerable variance with this general, over-all picture. Ground water is used extensively in Japan for irrigation, industrial processing, and public and domestic supply. Records are meager and scattered.

It was determined, however, that water is taken from more than 5,000 large-capacity wells and many thousands of smaller wells. In Tokyo alone there are nearly 900 large-capacity industrial wells.

"Heavy pumping has reduced artesian flow, has increased the pumping lift in wells, and has caused land subsidence and sea-water encroachment in many areas," the report adds.

"Systematic and c o n t i n u o u s studies of the ground-water resources never have been made," Brashears said. "Information as to the amount and rate of utilization and the fluctuation in the amount of water stored underground is very incomplete. Consequently, costly situations due to excessive utilization develop unnoticed because trends are not charted."

#### Recommendations Outlined

The recommendations detailed in the report advise the Japanese Government to establish and adequately finance a scientific bureau charged with making systematic and continuous investigations of both ground-water and surface-water supplies. Part of the effort of this agency should be directed toward the preparation of educational reports explaining the value and potentialities of ground-water resources and promoting the improvement of well-drilling methods. Assistance should be given to the well-drilling industry to obtain modern equipment and technical help, the report states.

In conclusion, the Japanese Gov-

ernment is advised to consider carefully the need for establishing laws that would control the use of ground water and the drilling of water wells.

## Gravity Action Prevents Pump Motor Reversal

When electric motor current ceases, a vertical turbine water pump back-spins unless means are provided which prevent motor reversal to avoid damage to pump bearings. A new method of preventing reversal of U. S. vertical hollow-shaft motors has been developed by U. S. Electrical Motors Inc., Los Angeles, Calif. according to the manufacturer.

By using balls a backstop that depends on natural laws has been developed. When the motor starts, centrifugal force throws the hardened steel balls out of engagement with the stationary member. When the motor stops, gravity pulls the balls down and one of them engages between the rotating member and the stationary ratchet, thus preventing reversal. The backstop is designed with a different number of balls and ratchet flutes which multiplies the possible number of locking positions in one rotation, thereby reducing impact and wear.

## Patent Granted for Water-Hardness Tests

Dr. Gerold Schwarzenbach, noted Swiss scientist, has been granted U. S. patents Nos. 2583890 and 2583891, which cover the new water-hardness tests that have gained widespread use in the past two years in this country.

Hagan Corp., Pittsburgh, Pa., com-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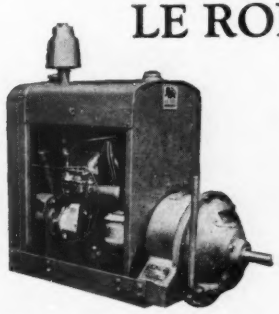

Model D91-RP7 Industrial Power Unit

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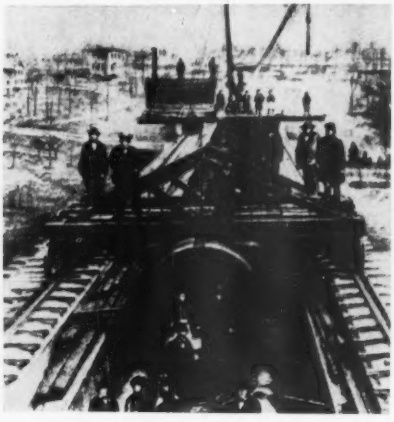
bustion and chemical engineering firm, and its affiliated companies, who are licensed under these patents, confirmed reports in industrial circles that official notice of the patents had been received.

Dr. Schwarzenbach, professor of chemistry at the University of Zurich and associated with the Swiss firm, Chemische Fabrik Uetikon in this development, is credited with revolutionizing the text procedures for water hardness. His method for total hardness determination has proved rapid, simple, and accurate within one part per million.

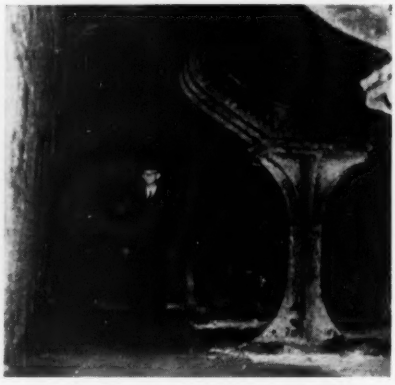
A spokesman for Hagan Corp. stated that its affiliate, Hall Laboratories, Inc., engineering consultants on industrial water problems, had worked out modified procedures, reagents and equipment which make the basic Schwarzenbach methods convenient for field use.

Both total hardness and hardness due to calcium alone, can be quickly and precisely determined by the new test methods. Magnesium can be determined by difference. The method for total hardness is especially sensitive to small amounts; with no special precautions 1-ppm of hardness is detected, and with special techniques and more dilute titrating solutions even lower concentrations can be determined.

There is no limitation on sample size, other than economy of operation, since no scum or salt effect can obscure the endpoint. The new methods are widely applicable to high or low hardness, in even fairly concentrated brines and thus are gaining broad use in industry, public



**It was a great day in 1860 when the people in the lithograph put on their Sunday best and posed for the artist. The event was the laying of the Croton aqueduct, an engineering marvel fabricated from half-inch wrought iron plate and designed to bring water to the bustling city of New York.**



**Bronx Borough Engineer for the Dept. of Water Supply, Gas and Electricity, John W. Dreyer, is shown on a recent inspection tour. The line is still in good condition. Originally designed for a flow of 90 million gallons per day, the aqueduct is now held to a capacity of 30 million gallons per day, because settlement cracks have weakened the brick connecting sections. During the twenties, the four central masonry bridge arches were replaced with a steel span.**

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Dependability is the key reason why more and more experienced drillers are buying Bucyrus-Erie drill tools. These accurately shaped tools are built to the degree of hardness, toughness and strength required to "crack the nut" of the toughest drilling jobs encountered.

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and private steam generating plants, marine applications and elsewhere.

Information on these tests is available from Hagan Corp. and its associates, Calgon, Inc., and The Buromin Co., 323 Fourth Ave., Pittsburgh 22, Pa.

## Modern Methods

*(Continued from page 17)*

pletely dwarfs any difficulties and problems that may be encountered in obtaining it. It is important then that the driller equip himself with the best and most modern level indicating equipment so that he will be in a position to meet any water level problems that may arise. Once he has obtained level data he must then be very careful in interpreting the information before he can be certain that he has obtained information truly representative of the pumping or static levels.

## Fresh Water Dike

*(Continued from page 13)*

done. The barge went aground one night tied to shore on a falling river, started tipping, and sank when the wind came up. The rig was not recovered.

One of the toughest water jobs of all was done speedily and well at San Nicholas Island, well out in the Pacific Ocean off the California coast, where O. J. Porter Co. of Sacramento had a contract for sampling and design of a wharf. To make the proper study, Porter hired Peck's 24-L and his operator to recover a 3 inch core 35 ft. deep under 32 feet of water.

The time of year was March and April, when the Pacific is especially disposed to roughness, crashing ground swells and hard winds. The site of the proposed wharf was none too well sheltered from the open sea. A Howard Turner Drill Master rig, operating from a barge, was first tried but they were unable to hold the barge steady enough to accomplish the work. A Diamond Drill P C #8 was then mounted on a 10 by 12-ft. platform above water level, suspended by a rigid pipe derrick, set on the ocean floor. The platform held up and the hole was bottomed at 35 feet after drilling through good sandstone. Engineers were pleased at the recovery of 96% of core material.

"And you can bet I was pleased to get that rig out of there safely," peck said, smiling.

### Repair Shop is Extensive

Drill bit sharpening and most major repairs are made at the Gardena headquarters yard, where Peck and his brother have a complete line of tools, blacksmith shop, and even a 15-inch lathe. Every effort is made to send drills out to a job in top-notch condition so the well will go down speedily.

The mud scow method of drilling detailed in Part II of this series is typical of much of the footage Peck drills each year. The method is particularly good in the Los Angeles basin or any other caving formation, and the fact that Roscoe Moss headquarters are in the same general area helps Peck to get the stovepipe casing he needs for this type of drilling.

As the years go by, the Pecks continue to prosper and grow with their community, and the drilling currently under way at Manhattan Beach will probably be long remembered by them and by California hydraulic engineers. Both are planning and working toward a better future for the Golden State and its underground water supplies.

# BARGAIN counter

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: 60c per line. Minimum charge $2.40. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date — 10th of preceding month. Example — January issue closes December 10th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

## DRILLS FOR SALE

Ideco well machine No. 16. Two years old, like new. Mounted on Chevrolet truck. No tools with machine. Guy Beemer, Lakota, Iowa.

Failing 36 rotary well drilling machine. Complete with two 1½-ton Ford trucks, 450 ft. drill rod, tools and dies. All in good condition, $8500. J. L. Suttles, Americus, Ga.

Bucyrus-Erie 21-W mounted on Ford truck, chain driven catheads. Drill is working most all the time. Price on request. H. J. Brenner, W. Lebanon, Ind.

Keystone 50 drill without truck or tools. Machine in good working order and may be purchased immediately. Apply to Louis E. Allyn and Son, East Canaan, Connecticut. Telephone 85600.

Bucyrus-Erie 22-W drill mounted on 10-wheel 1946 Ford truck; complete with all drilling tools for 6" wells. All equipment in excellent working condition. Machine available for immediate purchase. Apply to Eino Heine, New Ipswich Road, Ashby, Massachusetts. Telephone Ashby 13 Ring 13.

## DRILLS FOR SALE

Bucyrus-Erie 22-W drilling machine mounted on 1941 Ford truck. Machine is equipped with derrick hoist, spooling device, casing reel, etc. Machine and truck in good condition, ready to go. Hoeg & Ames, Lincoln, Iowa. Phone 23F4.

No. 10 Ideco purchased new in 1948, mounted on 2-ton Federal truck. Telescope mast, pipe braces, catheads, new shocks, new V-belts, 600' new drill cable. Full line of tools for six-inch work. This machine is in first rate condition. Chet Kinne, White Lake, New York.

Model 50 Keystone water well drill for sale. Purchased new 1947. With calf reel, stiff leg braces. Hercules J.X.D. six-cylinder motor, blower, tool guide, etc. Mounted on a 1939 GMC truck with good 10.00x20 tires. Price $3900. Scales Bros., Rutland, Massachusetts.

No. 50 Wichita with 50' mast made of steel, Monarch motor, dog house tools from 12½ down to 5". Ford winch truck. FOB Oklahoma, $4000. Also shop-built machine built on order of 35 Armstrong. Mounted on '42 White truck, 6 & 8" tools. $1000 or $600 without truck. The small machine has a wood frame but is solid and in good condition. R. A. Holland, Rt. 1, Barnsdall, Oklahoma.

Bucyrus-Erie 22-W drill mounted on 1940 Ford, 1½-ton truck. Drill equipped with casing reel and rubber cushioned sheaves. Located in Illinois and in excellent condition. Box 477

Howell 120 mounted on '39 Chev. 2-ton truck. Casing reel, pipe braces, 500 ft. of ⅝" cable, 500 ft. of ¾" cable, complete strings of 3" and 4" tools. Complete strings of 5 in. and 6 in. tools also. Millard Gilmer, Rt. 11, Mpls. 22, Minn. OR 5-8606.

Failing 1500 truck mounted, complete, also Failing 1000, tools, drill rod. Fred E. Butler, Box 1832, Casper, Wyo.

## DRILLS FOR SALE

#71 Star, mounted on 1934 GMC 3-ton, 6-wheel drive truck. Truck has new 1951 engine and transmission. Patented hydraulic jack system permits simultaneous drilling and casing. Level wind automatic spooling device on bull reel. 6" and 10" drilling scows, drill and drill stem, jacks, wire cables, tackle blocks, etc. Truck and rig completely overhauled 1951: have not been used since. J. A. Bray, 3075 Telegraph Ave., Berkeley 5, Calif.

Bucyrus-Erie 22-W drill. Two years old, mounted on a 1932 International 2-ton truck with good rubber, no casing reel just a tool guide, power derrick hoist, drill tools and cables. A-1 condition. Box 474

Bucyrus-Erie 21-W, truck mounted, working every day. In good condition.

No. 35 Armstrong, in good condition, working every day. 500 feet sandline and 500 feet drill line included on each machine. No tools. L. L. May, Rte. 13, Box 432, Milwaukee 7, Wisconsin. Phone SO 2-3230.

#71 Speed Star, on 2-ton truck. Very good condition. $2275 without tools. F. N. Hagmann, Jr., Vienna, Va.

Repossessed practically new 1950 Ideco No. 16 on 1945 GMC 6x6 truck driven only 10,322 miles. Bargain at $4000 cash. Southern Pipe & Supply Co., 630 West Church St., Orlando, Florida.

Bucyrus-Erie 36-L for sale, new 1950, Cummins diesel motor, trailer mounted with vacuum brakes, casing strut, spooling device, tension clamp, pulley extension, tool crane. Rig is completely equipped with all tools and casing equipment for 8", 6" and 5" holes, including steel doghouse and fuel house trailer mounted, Kohler light plant, 8" drive tools. New 3500 ft. drill line, and sand line. Rig has never drilled below 1800 ft. and is like new. Box 470

*(Continued on page 38)*

## DRILLS FOR SALE

*(Continued from page 37)*

4½x12 drill stem; swivel wire socket; two 6⅝" drill bits; 4½x10 dart bailer; 5½-x8 flat bottom bailer; two tool wrenches; No. 2 bar and chain tool wrenches; driver clamp 3x11x13½; pin hook with swivel hook; tool guide; blower. 300 ft. of ⅝" drill line new. 300 ft. of ⅝" sand line good. All joints are 2¼x3¼-7 API.

Bucyrus-Erie 21-W, No. 73323 1949 Model, in very good condition. Mounted on 1937 IHC 2-ton 2-speed axle in good condition. Tires are fair. Machine does not have a casing reel. If you are interested and want it NOW, I will take $2850 CASH. If you want to see it call 29F2, Okarche. The first one that gets here and has the cash will be the new owner. Clarence Schroeder, Okarche, Okla.

No. 1½ all-steel Loomis Clipper, semi-trailer mounted with dual pneumatic rear wheels and trailer bracket. Powered by Chevrolet engine, just overhauled, with 3-speed transmission. 40-ft. all-steel telescoping derrick with shock absorber at top, tool guide, and pipe braces. Casing reel. Machine in good operation condition. Price $1000. Price with 4-in. tools and cable $1200. Write or phone Charles J. Zuber & Son, 2315 Wayne Trace, Fort Wayne, Ind. Phone Anthony 2403.

## MISC. FOR SALE

Drive pipe, Spang drilling tools, Keystone drilling tools, Larkin drive shoes and well seals, Wickwire drilling cable, drive couplings, plastic and copper pipe. Water pumps. Machine shop work. Fishing tools for rent. The only complete well drilling supply house in Northern New York. J. G. Piscitelli & Son, Lower Maple St., Hudson Falls, N. Y. Tel. 4-5806.

Shop-built water well drilling machine. All steel, truck mounted, 40 ft. mast with Bucyrus-Erie cushioned top, hydraulic lift. Glen W. Enes, Box 118, Lovell, Wyo.

Reverse hydraulic well rig, practically new. Drills 30" hole. Tools, 6" drill stem and trucks. Ideal for irrigation wells. Reverse hydraulic well rig for making tests and stock wells. Four inch drill stem. L. M. Sharp, Sidney, Nebr.

## MISC. FOR SALE

NEWLY DESIGNED Water Level Indicators for accurate determination of pumping and static Water Levels are now available from FISHER RESEARCH LABORATORY, INC., of Palo Alto, California. The new MASTER Water Level Indicator features a special low cost electrode, two conductor cable, metal tag cable calibration, a handy reel type spool, and a low cost easily replaceable battery. The use of two conductor cable makes casing or other outside connections unnecessary so that the unit functions equally well in uncased test holes or uncased hard rock wells.

PRICES: 250 ft. Master WL $37.50; 500 ft. Master WL $47.50. These prices include one extra electrode. Replacement electrodes $1.00 each. All prices f.o.b. Palo Alto, California. FREE LITERATURE, FISHER RESEARCH LABORATORY, INC., Palo Alto, California.

Bucyrus-Erie jetting pump. Capacity 50 gmp 300 lbs. pressure. Mounted on steel base of 8" I-beams 7' long 2' wide. Wt. 1400 lbs. Power is transmitted from engine through a jackshaft pinion of 16 teeth meshing with large cut gear of 81 teeth on pump crankshaft. Ratio 5 to 1. Other end of jackshaft fitted with RC100 chain sprocket having 20 teeth for engine drive. Pump new in 1948 and taken from 22-W drill and never used. Priced at $350 f.o.b. Los Angeles.
Box 476

**Pipe for Sale**

New 3" galvanized standard well drillers pipe—21' lengths.
Box 473

Three Buda HP-326 gasoline engines, 6 cyl., 3 7/8" x 4¾", Governor set @ 1600 R.P.M., complete with fittings. Bargain price $650 F.O.B. South Milwaukee, Wisconsin. Bucyrus-Erie Company, South Milwaukee, Wisconsin.

Ford 1½-ton F5 6 cyl. truck 1948. $1050.

20-W trailer mt. telescope tower. $2950.

22-W truck mt. telescope tower. $3250.

33-W trailer mt. telescope tower. $1750.

Water trailer (Army) 250 gal. aluminum tank. 7.50x20 tires. $250.

Underreamer (almost new) Acme 3 blade to run in 8" line pipe cut 10" hole. $535.

Drilling tools for sale 4" to 10". J. Bolliger Sons, Fairbury, Ill.

## MISC. FOR SALE

Well casing, 5⅝", 6", and 6¼". New and used. Tom Scheuren, 933 Fern Ave., Reading, Pa. Phone 41287.

Some large bits and bailers. Invoice on request. Walker Drilling Company, Springerville, Arizona.

## WANTED

**Wanted: We buy good used well drilling equipment, spudders, rotaries, core drills, tools. Everything for well drilling and well service. Pressey & Son, Pueblo, Colo.**

## HELP WANTED

Pump Salesmen Wanted

We have openings for two aggressive pump salesmen; one selling water systems to the jobbing trade, the other selling industrial pumps. Both positions require inside and outside work. Give full information in letter. The Deming Company, Salem, Ohio.

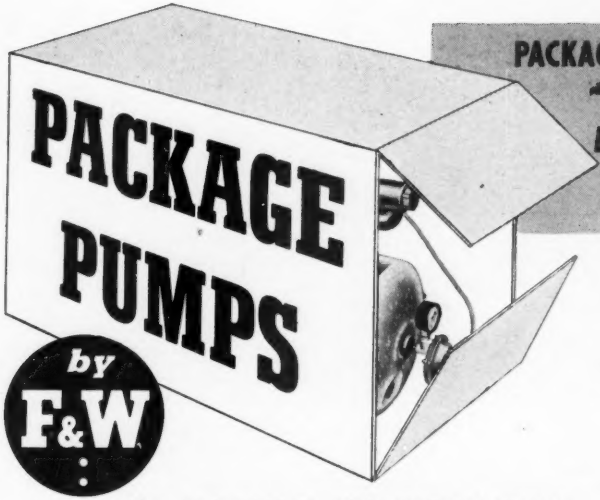
## POSITIONS WANTED

Driller. 12 years experience on all type rigs and settings of all types of pumps and plumbing. Welding & machine shop experience. Married, age 31, desires steady work in midwest. James Jardee, Stuart, Neb.

Experienced driller seeking a regular job. M. T. Hales, 324 Tucker Street, North Chattanooga, Tenn.

## PROFIT SHARING HOOKUP, WANTED

**Established my own pump and drilling business in Northern Indiana in the Spring of 1922. Have a light cable tool rig truck mounted, rigged for jetting 2" and 3" wells at present, also have small shop tools and office equipment, enough to carry on a two or three man business. Have done both rock and drift drilling and can handle anything in the domestic pump line. Am 54 years of age, would like to make a profit sharing,or partnership hookup with a driller, located in 2" to 4" territory, preferably in a small town.**
Box 462

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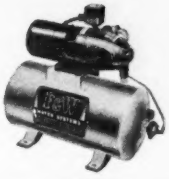

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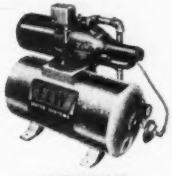

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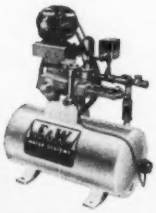
The F & W Multi-Purpose converts from shallow to deep well by moving jet off pump down into well.



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Where a shallow-well piston type pump is desired, this Model is an economical workhorse, available with either ¼ or ½ HP Motor.

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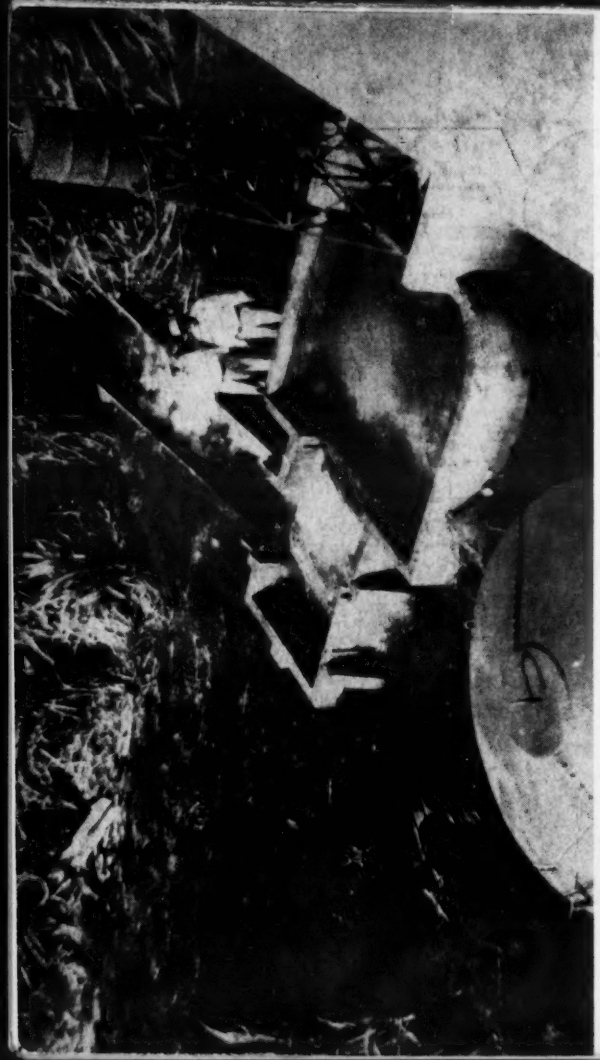

Approximately 300 acres of sugar cane in Camaguey Province, Cuba, is irrigated from this pumping installation owned by Central Violeta. Water is drawn, from the 20-inch well, from a depth of 100-feet at a rate of 3,500 gpm by Byron Jackson pumps which are actuated by Cat. Diesels. That's a fuel tank in foreground and surge chamber for cooling system on the right.


*The* **Driller**

*The monthly magazine for water well drillers*

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